

**IN MATTERS BEFORE THE UNITED STATES DISTRICT COURT**  
**RELATED TO NATIONAL FEEDS AND VARIOUS MINK PRODUCERS**

Including but not necessarily limited to the following two matters:

**KEITH JONSSON, MICHAEL JONSSON,  
CEDAR VALLEY FUR FARM, LLC,  
KENT GRIFFETH, MOUNT SMART  
ENTERPRISES, LLC, and ROGER  
GRIFFETH.**

Plaintiffs

v.

**NATIONAL FEEDS, INC.**

Defendant

-and-

**KOLBY STEMBRIDGE, KOLBY  
STEMBRIDGE MINK RANCH, GLAYDE  
W. STEMBRIDGE, GLAYDE'S MINK  
RANCH, GWS HOLDINGS, LLC,  
WENDELL STEMBRIDGE, GW FUR  
FARM, LLC.**

Plaintiffs

v.

**NATIONAL FEEDS, INC, RANGEN, INC,  
RALCO NUTRITION, INC, ZINPRO  
CORPORATION, and DOES 1-V.**

Defendant

\* \* \* \* \*

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**Report of Scott A. Brown, VMD, PhD**

I am a Josiah Meigs Distinguished Teaching Professor of Physiology & Pharmacology and Edward H. Gunst Professor of Small Animal Studies in the Department of Small Animal Medicine of the College of Veterinary Medicine at the University of Georgia with special emphasis in internal medicine, nephrology, and the impact of nutrition on the kidneys. I am board-certified in Small Animal Internal Medicine by the American College of Veterinary Internal Medicine and am the former Head of the Department of Small Animal Medicine & Surgery at the University of Georgia College of Veterinary Medicine. I am a member of the American Society of Veterinary Nephrology and Urology and the current President of the International Renal Interest Society, an international panel of experts in animal kidney diseases. I also teach physiology, pharmacology, and nephrology to veterinary students. I have published extensively in the scientific literature on the role of nutrition in kidney disease in general, and on the impact of dietary fat and antioxidants on the kidney in particular. In my roles, I consult on clinical cases related to diseases of the kidney and participate in the training of internal medicine residents and graduate students. Through my education, training, review of the medical literature and other

professional activities, I am familiar with causes and consequence of kidney diseases, the impacts of nutrition on the kidneys of animals, and pathologic and pathophysiologic changes in diseased kidneys.

I have reviewed documents provided by National Feeds via Morgan, Minnock, Rice, and James, LLC which included transcripts of depositions as well as other documents produced by defendants, plaintiffs, and other individuals (complete list available upon request) as well as pertinent scientific literature. I intend to render opinions in the area of renal lesions and diseases and cause of death, specifically addressing the question as to whether vitamin E and/or selenium deficiency was a contributor to death and illness in mink upon which these legal matters focus. My opinions are in part based on my review of the above documents, pathology reports from Wisconsin Veterinary Diagnostic Laboratory (28 mink; Table 1) and laboratory reports from the Utah Diagnostic Laboratory (Table 2), and the pathology findings of Dr. C. Brown's review of microscopic slides provided by the Wisconsin Veterinary Diagnostic Laboratory for accessions related to this case and my opinions are also based on my education and training, on my knowledge of the relevant literature, on my understanding of the facts in this particular case, and on my experience and expertise in the field of veterinary medicine and veterinary nephrology.

On this basis, I offer the following opinions in this matter:

1. Few, if any, mink died of nutritional myopathy from vitamin E and/or selenium deficiency with associated muscle, cardiac, and renal lesions. In the cases for which I reviewed the pathologist's findings, the expected histologic findings of this deficiency (cardiac and skeletal muscle necrosis and frank myoglobinuric nephropathy) were not confirmed.
2. Vitamin E and/or selenium deficiency was not an important cause of kidney disease in these mink. Myoglobin released from damaged muscle occurs in vitamin E and/or selenium deficiency and can produce kidney failure, referred to as myoglobinuric renal failure. While pigment was observed in the kidneys of some mink, it is not possible to confirm the nature of the pigment in these cases. The pigment may be hemoglobin, myoglobin, or protein, for example. Furthermore, the changes in the muscle and hearts in these mink are typically described as mild, making it unlikely that substantial myoglobin has been deposited intrarenally. While vitamin E and/or selenium deficiency does not appear to be an important contributor to kidney disease in these mink, classic and sometimes severe, renal lesions characteristic of Aleutian Mink Disease were observed in many mink.
3. Reduced hepatic Vitamin E and/or selenium levels developed in at least some affected mink. In several mink, hepatic vitamin E levels were reported as below normal. Unfortunately, this is a difficult assay to perform and is not reliable in autolyzed tissue (tissue which has degraded after death). In at least one mink, the Utah Diagnostic Laboratory reported reduced vitamin E levels in a non-autolyzed ("fresh") liver. In other mink, however, the vitamin E levels in the liver were normal. Furthermore, the effect of various diseases on vitamin E levels in the liver of mink is

unknown to me. That is, perhaps malnutrition, Aleutian Mink Disease, or gastrointestinal disease caused by some other agent could secondarily alter hepatic vitamin E and/or selenium content. If so, a change in the vitamin E level would be an effect of the disease, not the cause. This was noted by the pathologist at the Utah Diagnostic Laboratory who noted that hepatic lipidosis secondarily lowers the measured value for hepatic selenium content. This pathologist indicated that the low hepatic selenium content in these cases could have been caused by the liver disease, not vice versa.

4. To be clear, I cannot rule out some role for vitamin E and/or selenium deficiency for problems observed on these mink ranches. It would have been strongly preferable to perform immediate post mortem examinations and tissue analyses on a larger number of mink, including both healthy and unthrifty mink. Unfortunately, in the absence of such information it is my opinion that there is insufficient evidence to conclude that vitamin E and/or selenium deficiency was a major cause of illness or mortality in these mink.

I hold all of my opinions with a reasonable degree of medical probability.

This report is not intended to be a complete or final statement of my opinions, and I reserve the right to expand, modify or otherwise amend my opinions as the discovery process proceeds.

My compensation for offering this expert evaluation is \$250 per hour plus any associated travel fees and expenses. This is the first case in which I have served as an expert witness in a legal matter.

**Table 1: Microscopic slides of tissues, accession records, and pathology reports for the following accessions were provided in December 2011 by Dr. Peter Vanderloo of Wisconsin Veterinary Diagnostic Laboratory**

Accession Date	Listed Owner	Accession #	Animal
12/9/10 10:15am	Kent Griffeth	M10-35539	Mink 1
			Mink 2
12/9/10 10:17 am	Keith Jonsson	M10-33540	Mink 1
			Mink 2
			Mink 3
			Mink 4
			Mink 5
			Mink 6
12/21/10 9:16am	Kent Griffeth	M10-36416	Mink 1
			Mink 2
2/1/11 3:29 pm	Colby Stenbridge	M11-03166	Mink 1
			Mink 2
			Mink 3
			Mink 4
			Mink 5
			Mink 6
2/1/11 3:31pm	Roger Griffeth	M11-03167	Mink 1
			Mink 2
			Mink 3
			Mink 4
2/23/11 9:44am	Roger Griffeth	M11-07992	Mink 1
			Mink 2
			Mink 3
			Mink 4
	Kent Griffeth	M11-07992	Mink 5
			Mink 6
			Mink 7
			Mink 8

**Table 2: Copies of laboratory reports from the Utah Veterinary Diagnostic Laboratory, Main Laboratory, Logan, Utah for the following accessions were provided by National Feeds via Morgan, Minnock, Rice, and James, LLC**

Accession Date	Listed Owner	Accession #
8/17/10	Kolby Stenbridge	10-L1783
8/19/10	Kolby Stenbridge	10-L1830
10/6/10	Kolby Stenbridge	10-L2204
11/15/10	Kolby Stenbridge	10-L2466
9/13/11	Kolby Stenbridge	11-L2419
4/23/12	Kolby Stenbridge	12-L1239
8/25/10	Wendell Stenbridge	10-L1891
7/29/10	Jeff Hobbs	10-L1658
10/5/10	Jeff Hobbs	10-L2200
4/14/11	Jeff Hobbs	11-L984
6/6/11	Jeff Hobbs	11-L1534
6/9/11	Jeff Hobbs	11-L1589
2/2/09	Kent Beckstead	09-L231
2/4/09	Kent Beckstead	09-L253
2/23/09	Kent Beckstead	09-L419
3/10/09	Kent Beckstead	09-L572
4/3/09	Kent Beckstead	09-L797
4/9/09	Kent Beckstead	09-L846
9/9/09	Kent Beckstead	09-L2069
11/27/09	Kent Beckstead	09-L2677
1/5/10	Kent Beckstead	10-L24
1/7/10	Kent Beckstead	10-L48
9/22/09	Keith Jonsson	09-L2149
8/23/10	Keith Jonsson	10-L1844
9/8/10	Keith Jonsson	10-L1977
9/13/10	Keith Jonsson	10-L2021
11/16/11	Dwain Weeks	11-L3025
11/3/10	Kent Griffeth	10-L2441
12/3/10	Kent Griffeth	10-L2706
10/26/11	Kent Griffeth	11-L2829
11/3/10	Roger Griffeth	10-L2442

 12-3-12

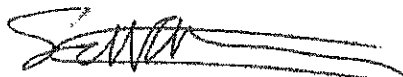
Scott A. Brown, VMD, PhD, Diplomate (Internal Medicine, ACVIM)

**ADDENDUM TO REPORT**  
**IN MATTERS BEFORE THE UNITED STATES DISTRICT COURT**  
**RELATED TO NATIONAL FEEDS AND VARIOUS MINK PRODUCERS**

Mink are susceptible to acute N-nitrosamine toxicity, indeed they are more sensitive than many mammalian species to acute toxicity from these compounds. While multiple organs can be acutely affected by this intoxicant, death of mink from acute intoxication with N-nitrosamines would be expected to produce histologically apparent hepatotoxicity; evidence of hepatotoxicosis was not a characteristic feature of animals in this matter. Therefore, death in adult animals cannot be attributed to the reported acute effects of N-nitrosamine toxicosis.

Chronic N-nitrosamine exposure could alter immune function but there is no direct evidence of immunosuppression in these animals. Further, the renal complications of Aleutian Disease contributed to the death of a significant proportion of the adult mink. In other mammalian species, immunosuppressive agents are used as treatment to control this particular kind of kidney disease. While little direct information is available about this approach in mink, extrapolation from other species would suggest that immunosuppression from chronic nitrosamine ingestion could make renal complications less likely, not more as was the case in this matter. Further, nitrosamines are potent carcinogens and chronic toxicity would be expected to result in increased incidence of cancer in adult mink, which to my knowledge was not observed.

There is clear evidence that disease processes not caused by N-nitrosamine are present in the affected mink. Assessing the possibility of a potential contributory role of N-nitrosamine is very difficult. Identifying N-nitrosamine in the diet and/or in mink does not establish causation. It is theoretically possible that N-nitrosamines contributed in some way to this matter, but there are not sufficient data to establish this conclusion and it is not the proximate cause of death in necropsied animals.

 25 Jan 13

Scott A. Brown, VMD, PhD, Diplomate (Internal Medicine, ACVIM)  
Josiah Meigs Distinguished Teaching Professor of Physiology & Pharmacology  
Edward H. Gunst Professor of Small Animal Studies  
College of Veterinary Medicine  
University of Georgia

**CURRICULUM VITAE – SCOTT A. BROWN**

**Scott A. Brown, VMD, PhD, Diplomate (ACVIM)**  
Josiah Meigs Distinguished Professor  
Edward H. Gunst Professor of Small Animal Studies  
Departments of Physiology & Pharmacology and Small Animal Medicine  
College of Veterinary Medicine  
University of Georgia  
Athens, GA 30602  
706-542-3015 (Fax); 706-542-3014 (Office)  
SBrown01@uga.edu

**Academic Positions in Chronological Order:**

1989-1993	Assistant Professor, Department of Physiology & Pharmacology, College of Veterinary Medicine, Athens, GA
1993- 1999	Associate Professor, Department of Physiology & Pharmacology, College of Veterinary Medicine, Athens, GA
1999- 2006	Professor, Department of Physiology & Pharmacology, College of Veterinary Medicine, Athens, GA
2003- 2006	Josiah Meigs Distinguished Teaching Professor, Department of Physiology & Pharmacology, College of Veterinary Medicine, Athens, GA
2005- 2006	Acting Associate Dean for Academic Affairs, College of Veterinary Medicine, Athens, GA (served for 20 months)
2006- 2011	Head, Department of Small Animal Medicine & Surgery, College of Veterinary Medicine, Athens, GA (served for 4.5 years)
2011-present	Edward H. Gunst Professor of Small Animal Studies and Josiah Meigs Distinguished Teaching Professor, Departments of Physiology & Pharmacology and Small Animal Medicine and Surgery, College of Veterinary Medicine, Athens, GA

**Educational Qualifications:**

College: Allegheny College  
Meadville, PA  
BS - Mathematics - 1977  
Summa cum laude - Valedictorian

Veterinary School:  
University of Pennsylvania  
VMD - 1982  
Summa cum laude - Valedictorian

Graduate School:  
Department of Physiology and Pharmacology  
University of Georgia College of Veterinary Medicine  
Allen Predoctoral Fellow  
American Veterinary Medical Foundation Fellowship  
PhD - Renal Physiology - June 1989  
Graduate Advisor: Delmar R. Finco, DVM, PhD

Post-doctoral Fellowship:  
Nephrology Research and Training Center  
University of Alabama School of Medicine  
May 1987 - November 1988  
Research Mentor: L. Gabriel Navar, PhD

Clinical Internship:  
Department of Small Animal Medicine and Surgery:  
University of Georgia College of Veterinary Medicine  
June 1982 - August 1983

Small Animal Internal Medicine Residency:  
Department of Small Animal Internal Medicine:  
University of Georgia College of Veterinary Medicine  
September 1983 - August 1987  
Board Certified, Specialty of Internal Medicine,  
Am Coll of Veterinary Internal Medicine (Internal Medicine) - 1987

**Professional Organizations:**

1982-present Member, American Veterinary Medical Association  
1987-present Member, American Society of Veterinary Nephrology and Urology  
1997-present Diplomate, American College of Veterinary Internal Medicine  
1999-present Member, International Renal Interest Society (Chair, 1999-2001; Pres 2012-14)

## **SUMMARY OF ACCOMPLISHMENTS RELATED TO RESEARCH**

### **Research awards**

Research Abstract Award, American College of Veterinary Internal Medicine Scientific Program, San Diego, Ca (1986)

President's Research Award, American College of Veterinary Internal Medicine Scientific Program, San Diego, Ca (1987)

Beecham Award for Research Excellence, The University of Georgia (1987)

SmithKline-Beecham Award for Research Excellence, The University of Georgia (1992)

Creative Research Medal, The University of Georgia (1997)

Erin Holder (Mentee of Dr. Brown): Received first place national award for manuscript and abstract presentation from the American Association of Zoo Animal Veterinarians in 2001: Holder E, Citino S, Businga N, Cartier L, Brown S. Measurement of glomerular filtration rate, renal plasma flow, and endogenous creatinine clearance in cheetahs (*Acinonyx jubatus jubatus*). *J Zoo Wildl Med* 35: 175-8, 2004.

American Veterinary Medical Research Excellence Award (National Award – 2002)

Association of Veterinary Diagnosticians Publication Award for most significant veterinary diagnostic publication for 2008: Brown C, et al. Outbreaks of renal failure associated with melamine and cyanuric acid in dogs and cats in 2004 and 2007. *J Vet Diagn Invest* 19: 525-531, 2007.

Royal Canin Award (National Career Achievement Award – 2009)

Chair, Science of Veterinary Medicine Symposium, UGACVM, 2011; 2012.

### **Administrative work related to research**

1. President, International Renal Interest Society (IRIS), 1998-2000; 2012-2014.  
*Group of International Experts in the field of veterinary nephrology devoted to the advancement of field and dissemination of knowledge (www.RenalHealth.org). Founding Chairperson of IRIS, 1998 – 2000. President for 2012-2014.*
2. Director, Georgia Veterinary Scholar Program, College of Veterinary Medicine, University of Georgia, Athens, GA, 1999-2002 ([www.VeterinaryScholar.org](http://www.VeterinaryScholar.org)).  
*The Georgia Veterinary Scholar Program is a summer program for veterinary students funded by support from the Merck Foundation and the state of Georgia. The primary goal of this program is to attract our graduates to careers in academia and biomedical research. Served as program director, authored the program website (www.VeterinaryScholar.org), and led the initiative to establish a national meeting of scholar programs. Our proposal to establish the National Symposium was funded by The Merck Foundation in 2000-2001. Our program hosted the First National Symposium here at UGA in 2001.*
4. Chair, Ad Hoc Committee on Clinical Research, College of Veterinary Medicine, UGA, 2001-2.  
*Led initiative to enhance clinical research at the College of Veterinary Medicine. This effort led to the establishment of the Clinical Research Program at the University of Georgia College of Veterinary Medicine.*

5. Chair, ACVIM Foundation Research Committee, 2001-2005.  
*As founding chair, I was responsible for facilitating the development of the granting mechanism and for directing the first two annual cycles of funding.*
6. Head, Department of Small Animal Medicine and Surgery, 2006-2011.  
*Responsible for development and support of departmental research infrastructure and mentoring of young faculty in the development of research programs.*

**Grants (Total of \$5.5 million)**

1. Brown S: The Mechanism of Vasodilation in Response to Amino Acid Infusions. Funded for \$10,000 by the Pharmaceutical Manufacturer's Association Foundation, 1990. Role: PI.
2. Brown S: Potential Benefits of N-Methyl Arginine Therapy in Cats with Experimental Renal Failure. Funded for \$9925.00 by The R.H. Winn Foundation, 1990. Role: PI.
3. Brown S and Finco D: Evaluation of Calcitriol as a suppressant of hyperparathyroidism in dogs with experimental renal failure - Hoffman-La Roche Pharmaceuticals, \$231,000; 1990-1991. Role: PI.
4. Sims MH, Brown SA: Utilization of a self-test/self-evaluation format in the professional curriculum, Pew Educational Foundation, \$3500, 1990-1991. Role: Co-I.
- Brown S: Role of dietary lipids in the progression of renal disease in the dog. Morris Animal Foundation. Funded for \$103,000; 1991-1993. Role: PI.
5. Brown S: Glomerular Capillary Hypertension: Role of Intrarenal Mechanisms. Georgia Affiliate of The American Heart Association. Funded for \$32,495; 1991. Role: PI.
6. Brown S and Finco D: Evaluation of Calcitriol as a suppressant of hyperparathyroidism in dogs with experimental renal failure - Hoffman-La Roche Pharmaceuticals, \$81,000; 1991-1992. Role: PI.
7. Brown S, Crowell W. The role of endothelially derived nitric oxide in progressive renal injury. Funded for \$6471 by the University of Georgia Research Foundation, 1992. Role: PI.
8. Schnellmann R and Brown S: Summer Student Fellowship, American Heart Association, \$2750, 1992. Role: Co-I.
9. Brown S and Finco D: Evaluation of the effects of the use of Calcitriol as a suppressant of hyperparathyroidism in dogs with experimental renal failure - Hoffman-La Roche Pharmaceuticals, \$34,000; 1992. Role: PI.
10. Brown S: Treatment of systemic and intrarenal hypertension in cats with renal disease. The R.H. Winn Foundation, \$14,850; 1992. Role: PI.
11. Brown S: Canine mesangial cells in culture. University of Georgia Veterinary Medical Experiment Station, \$15,575; 1992-1994. Role: PI.
12. Brown S and Finco D: Summer Student Fellowship, American Heart Association (Kimberly Langford), \$2750, 1994. Role: PI.
13. Brown S: Role of dietary lipids in cats with chronic renal disease. Morris Animal Foundation, \$49,939; 1993-1995. Role: PI.

14. Brown S, Finco D, Barsanti J, Brown C. The use of plasma iothexol clearance to estimate GFR in cats. The R.H. Winn Foundations, \$3,940; 1994-1995. PI.
15. Brown S. A canine model of anaphylaxis, American Cyanamid \$27,000; 1994-1995. Role: PI.
16. Brown S, Finco D, Barsanti J, Crowell W, Brown C. Dietary potassium and feline renal disease, Morris Animal Foundation, \$27,200; 1994-1996. Role: PI.
17. Brown S, Finco D, Barsanti J, Crowell W, Brown C. Potential benefits of angiotensin converting enzyme inhibition in dogs with renal disease, Merck and Co., \$79,250; 1994-1996. Role: PI.
18. Brown S, Finco D, Barsanti J, Crowell W, Brown C. Dietary lipids and canine renal disease, The Iams Co.; \$128,800, 1994-1996. Role: PI.
19. Finco D, Brown S, Barsanti J, Crowell W, Brown C. Effects of dietary protein and energy on cats with chronic renal disease, The Iams Co., \$118,800; 1994-1996. Role: Co-PI.
20. Brown S, Finco D, Barsanti J, Crowell W, Brown C. Dietary lipids and feline renal function, Ralston-Purina Co., \$43,800; 1994-1996. Role: PI.
21. Brown S, Finco D, Brown, C, Crowell W. Antihypertensive therapy in cats with renal disease, The Winn Feline Foundation, \$9,625; 1996 - 1998. Role: PI.
22. Brown S. Effects of dietary fermentable fiber on uremia in dogs with chronic renal insufficiency, The Iams Co., \$28,260; 1996-1998. Role: PI.
23. Brown S, Finco D, Barsanti J, Crowell W, Brown C. Obesity, systemic hypertension, and canine renal disease, Morris Animal Foundation, \$98,500; 1994-1998. Role: PI.
24. Brown S, Stiles J, Jacobs G, Crowell W, Brown C. Efficacy of antihypertensive agents in renal failure, Novartis Animal Health, \$212,000; 1997-1999. Role: PI.
25. Brown S. Effects of antioxidants and omega-3 polyunsaturated fatty acids on renal and immune function in dogs, Brown S (PI), 10%, The Iams Co., \$174,356; 1999-2003. Role: PI.
26. Brown S, Finco D, Barsanti J, Crowell W, Brown C. Choice of antihypertensives in cats with renal disease, Morris Animal Foundation, \$64,746; 1997-1999. Role: PI.
27. Moore J, Brown S, Trim C, Nute D, Coleman T: Development of Virtual Animals for Case Simulation in Veterinary Medicine, USG Teaching and Learning Grants Program, \$13,833, 1999-2000. Role: Co-I.
28. Dickerson H, Brown S, Little S: Georgia Veterinary Scholar Program, The Merck Foundation, \$30,000, 1999-2000. Role: Co-PI.
29. Brown S. Efficacy of antihypertensive agents in canine renal failure, Pfizer, \$102,000, 1999-2002. Role: PI.
30. Brown S. Efficacy of antihypertensive agents in feline renal failure, Pfizer, \$1,037,000; 1999-2002. Role: PI.

31. Evaluation the efficacy of spirapril hydrochloride in a model of feline renal insufficiency. Brown S (PI), 20%, Schering, \$74,300, 2000-2002. Role: PI.
32. Dickerson H, Brown S, Little S: Georgia Symposium of Veterinary Student Research Scholars, The Merck Foundation, \$12,000, 2000. Role: Co-PI.
33. Dickerson H, Brown S, Little S: The Georgia National Symposium of Veterinary Student Research Scholars, The Merck Foundation, \$105,000, 2001. Role: Co-PI.
34. Buranakarl C and Brown S: Continuing Education Workshop, Sponsored by Royal Thai Government, 15 hour lecture and laboratory training for veterinarians, Bangkok, Thailand, \$10,000, September 2002. Role: Co-PI.
35. Brown S. Role of urotensin II in systemic hypertension. GlaxoSmithKline, \$135,000, 2003-2005. Role: PI.
36. Effects of two diets on spontaneous canine renal insufficiency, Sanderson S and Brown S, The Iams Co, \$25,431, 2002-2006. Role: PI.
37. Brown S. NSAIDs and renal disease. Boehringer-Ingelheim, \$8,500, 2005-2006. Role: PI.
38. Brown S. Dietary phosphorus binding agent in cats with hyperphosphatemic renal disease. Vetoquinol, \$94,000, 2003-2008. Role: PI.
39. Sanderson S, Brown S. Comparison of Two Dietary Approaches to Managing Chronic Renal Failure (A Multicenter Study)--The Iams Company, \$27,949.00, 2005-2007. Role: Co-I.
40. Allen S, Brown S, Carmichael K, and Lee M: Enhancing diversity in the veterinary workforce. Multicultural Scholar Grant Program, USDA, \$120,000, 2005-2010. Role: Co-PI.
41. Schmiedt C, McAnulty J, Brown C, Brown S. Creation of a model for hypertension following cold ischemic injury and renal transplant in the rat. University of Georgia Faculty Research Grants Program, \$15,000, 2008-2009. Role: Co-I.
42. Schmiedt C, Hurley D, Brown C, Brown S. Aldosterone inhibition and the severity of chronic allograft nephropathy. University of Georgia Veterinary Medical Experiment Station, \$8,750, 2008-2009. Role: Co-I.
43. Oliver S, Brown S, Cohen A, Moore J, Robertson T, Ward C: Learning biological processes through animations: An inquiry based approach. NIH-SEPA, 2008-2013 (\$1,300,000). The major goals of this project are to create, implement and evaluate the incorporation of 3-D models and animations in the teaching of basic biological processes to high school students. Role: Co-PI.
44. Robertson T, Brown S, Ward C: Synapse. NIH-SBIR, 2011-2013 (\$540,000). The goal of this support is to develop a strategy for producing, distributing, and marketing educational software. Role: Co-PI and IS3D Board Member.
45. Murphy H, Dindo M, McManamon R, Dennis P, Lowenstine L, Brown C, Brown S, Ellis A, Rapoport G, Brainard B, Terio K, Murray S: The Great Ape Heart Project: Developing new strategies for disease investigation. IMIS 045428-01, 2012-2015 (\$485,000).

**Pending research support (\$1,010,000 pending)**

Brown S, Cohen A, Moore J, Robertson T: Engaging students in NIDDK-related research: An interactive, inquiry-based approach. NIH-NIDDK, 2012-2017 (R25: \$535,000). The major goals of this project are to create, implement and evaluate 3-D models and animations in physiology education.

Role: PI.

**Publications (Peer Reviewed)**

1. Brown S, Barsanti J, Crowell W: Gentamicin-associated acute renal failure in the dog. *J Am Vet Med Assoc* 186:686-690, 1985.
2. Spyridakis L, Brown S, Barsanti J: Amyloidosis in a dog: Treatment with dimethylsulfoxide. *J Am Vet Med Assoc* 189:690-691, 1986.
3. Brown S, Rakich P, Barsanti J, Finco D: Fanconi syndrome and acute renal failure associated with gentamicin therapy in a dog. *J Am Anim Hosp Assoc* 22:634-640, 1986.
4. Bacia J, Spyridakis L, Barsanti J, Brown S: Ibuprofen toxicosis in a dog. *J Am Vet Med Assoc* 188:918-919, 1986.
5. Brown S, Spyridakis L, Crowell W: Distal renal tubular acidosis associated with hepatic lipidosis in a cat. *J Am Vet Med Assoc* 189: 1350-1352, 1986.
6. Finco D, Barsanti J, Brown S: Ammonium chloride as a urinary acidifier in cats: efficacy, safety, and rationale for its use. *Modern Veterinary Practice* 67:537-541, 1986.
7. Brown S, Crowell-Davis S, Malcolm T, Edwards P: Naloxone responsive compulsive behavior in a dog. *J Am Vet Med Assoc* 190: 884-888, 1987.
8. Finco D, Adams D, Crowell D, Stattelmann A, Brown S, Barsanti J: Influence of continuous versus intermittent feeding of cats on oral intake and urinary excretion of minerals. *Am J Vet Res* 47:1638-1642, 1987.
9. Finco D, Rawlings C, Crowell W, Brown S, Barsanti J: Efficacy of azathioprine versus cyclosporine on kidney graft survival in transfused and nontransfused unmatched mongrel dogs. *J Vet Int Med* 1:61-66, 1987.
10. Mahaffey E, Brown T, Duncan J, Latimer K, Brown S: Basophilic leukemia in a dog. *J Comp Path* 97:393-399, 1987.
11. Medleau L, Brown C, Brown S, Jones C: Feline demodicosis: Report of 4 new cases and review of the literature. *J Am Anim Hosp Assoc* 24:85-91, 1988.
12. Brown S, Barsanti J: Quantitative buffy coat analysis for hematologic measurements of canine, feline, and equine blood samples and for detection of canine microfilaremia. *Am J Vet Res* 49:321-324, 1988.
13. Finco D, Barsanti J, Brown S: Influence of dietary source of phosphorus on fecal and urinary excretion of phosphorus and other minerals by male cats. *Am J Vet Res* 50:263-266, 1989.

14. Brown S, Groves C, Barsanti J, Finco D: Determination of excretion of inulin, creatinine, sodium sulfanilate, and phenolsulfonphthalein to assess renal function in goats. *Am J Vet Res* 51:581-586, 1990.
15. Brown S, Barsanti J, and Finco DR. Glucose conservation and effect of systemic glucose infusion on inulin clearance in female goats. *Am J Vet Res* 51:587-590, 1990.
16. Brown C, Crowell W, Brown S, Finco D, Barsanti J: Suspected familial renal disease in Chow Chows. *J Am Vet Med Assoc* 196:1279-1284, 1990.
17. Brown S, Finco D, Choat D, and Navar L: Single nephron adaptations to partial renal ablation in dogs. *Am J Physiol* 258 (Renal Fluid Electrolyte Physiol. 27):F495-F503, 1990.
18. Brown SA, Navar LG: Single nephron responses to parenteral administration of amino acids in dogs. *Am J Physiol* 259 (Renal Fluid Electrolyte Physiol. 28):F739-F746, 1990.
19. White JV, Finco DR, Crowell WA, Brown SA, Hirakawa DA: Effect of dietary protein on kidney function, morphology, and histopathology during compensatory renal growth in dogs. *Am J Vet Res* 52:1357-1365, 1991.
20. Finco D, Brown S, Barsanti J, and White JV: Exogenous creatinine clearance as a measure of glomerular filtration rate in dogs with reduced renal mass. *Am J Vet Res* 52:1029-1032, 1991.
21. Brown S, Crowell WA, Barsanti JA, White JV, and Finco DR: Beneficial effects of dietary mineral restriction in dogs with marked reduction in functional renal mass. *J Am Soc Nephrol* 1:1169-1179, 1991.
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83. Surdyk K, Sloan D, and **Brown SA**. Evaluation of the renal effects of carprofen and etodolac in euvolemic and volume-depleted dogs. *Am J Vet Res* 2012;73:1485-1490.

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2. **Brown S**. Hypokalemic-Azotemic cat: A chicken and egg question? *Veterinary Forum*, December 1993, 42-44.
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4. **Brown S**. Commentary: Endogenous nitric oxide. *Advances in Small Animal Medicine and Surgery* 7:6-7, 1994.
5. **Brown S**. Medical management of chronic renal failure. *Vet Forum*, October 1995, 37-41.
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#### Research Abstracts – Oral and Poster Communications

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6. Brown S, Barsanti J: Reliability of a method of buffy coat analysis for hematologic measurements. Proceedings, American College of Veterinary Internal Medicine Scientific Forum, San Diego, CA, 1986.
7. Brown S: Advances in the use of the canine renal allograft model. Proceedings, Clinichem 86 Scientific Program, New York, NY, 1986.
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10. Brown S, Finco D, Crowell W, Barsanti J: Effects of dietary mineral restriction on dogs with chronic renal failure. Proceedings, American College of Veterinary Internal Medicine Scientific Forum, San Diego, CA, 1987.
11. Brown S: Recent advances in our understanding of renal physiology and their clinical significance. Proceedings, Research Section of American Veterinary Medical Association Annual Meeting, Chicago, IL, 1987.
12. Brown S, Crowell W, Finco D: Renal lesions in partially nephrectomized dogs. Proceedings, American College of Veterinary Pathology, Kansas City, 1988.
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18. Brown SA and Navar LG. Investigations of the mechanism of renal vasodilation during amino acid infusion. Proceedings, FASEB Summer Research Conference, Saxtons River, VT, 1989.
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21. Brown S and Finco D. The chronic course of renal function following 15/16 nephrectomy in dogs. Proceedings, American College of Veterinary Internal Medicine Scientific Forum, Washington, DC 1990.
22. Finco D and Brown S. Exogenous creatinine clearance reliably measures glomerular filtration rate in dogs with reduced renal mass. Proceedings, American College of Veterinary Internal Medicine Scientific Forum, Washington, DC 1990.
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35. Cowan LA, McVey S, Brown SA, McLaughlin R. Alterations of T-lymphocytes in dogs with chronic renal failure treated with stanozolol. J Vet Int Med 8:165(A), 1994.
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48. Elliott DA, Backus RC, Brown SA. Increased plasma leptin concentrations in cats with chronic renal failure. J Vet Int Med 1999;13:279.
49. Brown SA, Brown C. Does systemic hypertension cause progressive renal injury in dogs? Proceedings, Am Coll of Vet Int Med Forum, Seattle, WA, 2000.
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53. Reynolds V, Mathur SM, Brown C, Cartier L, Sheldon S, Brown C, and Brown SA. Lack of efficacy of losartan as an antihypertensive in cats. Am Coll of Vet Int Med Forum, Dallas, TX, 2002.
54. Boozer L, Mathur SM, Brown C, Cartier L, Sheldon S, Brown C, and Brown SA. Failure of serum creatinine normal ranges in defining feline renal failure. Am Coll of Vet Int Med Forum, Dallas, TX, 2002.
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56. Sanderson SL, Tetrick M, Brown SA, Adams LA, Kruger JM, Vaden SL, Moore LE. Relationship between serum iothexol clearance and reciprocal of serum creatinine in dogs with naturally-occurring chronic renal failure. J Vet Int Med, 19:433, 2005.
57. Surdyk K, Brown S. Effects of meloxicam and aspirin on glomerular filtration and renal blood flow in cats with renal insufficiency, NSAID Interest Panel, Key West, FL, 2006.
58. Goodman L, Brown S, Budsberg S. Effects of nonsteroidal anti-inflammatory drugs on renal function in normal cats. NSAID Interest Panel, Key West, FL, 2007.
69. Sung, S., Stanger-Hall, K., Wiegert, C., Li, W., Moore, J., Oliver, S., Brown, S. Robertson, T., & Shen, J. Concept mapping for clarifying big ideas across disciplines: An example on osmosis. Poster presented at the first national annual meeting of the Society for the Advancement of Biology Education Research (SABER). University of Minnesota- Twin Cities, 2011.

70. Shen, J. Wiegert, C., Sung, S., Stanger-Hall, K., Li, W., Moore, J., Oliver, S., Brown, S. & Tom Robertson. Concept Mapping to Clarify Interdisciplinary Themes: An Example Using Osmosis. Poster presented at the annual summer meeting of the American Association of Physics Teachers (AAPT), 2011.

**Invited Book Chapters - 68 total (1982-present)**

**Representative examples (14)**

1. Brown S. Physiology of the Urinary Tract. In Slatter D (ed): Textbook of Small Animal Surgery, WB Saunders, Philadelphia, 1993, pp. 1384-1393.
2. Brown S. Primary diseases of glomeruli. Canine and Feline Urology, Williams and Wilkins, Philadelphia, 1996, pp. 368-385.
3. Brown S. Chronic renal failure: Recent developments in medical management. Manual of Canine and Feline Urology and Nephrology, British Small Animal Veterinary Association, London, 195-208, 1996.
4. Brown S. Influence of dietary fatty acids on intrarenal hypertension. Recent advances in canine and feline nutrition (Volume II), Orange Frazer Press, Wilmington, OH, 1998, pp. 413-424.
5. Brown, S. A. (2005). Noninfectious diseases of the urinary tract of small animals. The Merck Veterinary Manual. C. M. Kahn. Whitehouse Station, N.J., Merck & Co: 1267-1270.
6. Brown, S and Grauer G. Diseases of the kidney, Handbook of Small Animal Practice, Morgan R, Bright R, Swartout M, eds., W. B. Saunders, 2003, pp. 500-527.
7. Brown, S. Hypertension, Heat Failure, and Shock., Duke's Physiology of Domestic Animals (12<sup>th</sup> Edition), Cornell University Press, 2004 pp. 343-355.
8. Brown, S. Pathophysiology of systemic hypertension, Textbook of Veterinary Internal Medicine (6<sup>th</sup> Edition), Elsevier Saunders, Ettinger S and Feldman E, eds., 2005, pp. 472-476.
9. Brown S. Hypertensive crisis, Small Animal Critical Care Medicine, Silverstein DC and Hopper KA (eds), Elsevier, St. Louis, MO, 2008; 176-179.
10. Brown S, Henik R. Systemic hypertension in dogs and cats. Manual of Canine and Feline Cardiology, WB Saunders, Philadelphia, 2008.
11. Brown S. Staged management of kidney disease. Consultations in Feline Internal Medicine, August J (ed), Elsevier, St. Louis, 2010.
12. Brown S. Chapter 68: Systemic arterial hypertension, Nephrology and urology of small animals, J. Bartges and D. Polzin (eds), Wiley-Blackwell, 2011.
13. Brown S. Chapter 2: Physiology of the kidneys, The Kidney, D. Polzin and J. Bartges (eds), Wiley-Blackwell, 2011.
14. Brown S. The use of NSAIDs in chronic kidney disease, Current Veterinary Therapy XV, J. Bonagura and D. Twedt (eds), In press, 2012.

**Research – Other accomplishments**

Member of Research Committee and Scientific Advisory Committee, National Kidney Foundation, Georgia Affiliate, Atlanta, GA, 1991-1993.  
Consultant, Cardiovascular Dynamics and Their Control (NIH Program Project Grant: John E. Hall, et al); University of Mississippi Medical Center, Jackson, MS; 1992.  
Manuscript Reviewer: Hypertension, Journal of the American Veterinary Medical Assoc, Journal of Clinical Investigation, American Journal of Veterinary Research, American Journal of Physiology, Journal of Veterinary Internal Medicine, Journal of Veterinary Critical Care.  
Participant, Great Ape Heart Project (GAHP), 2011-2012. Project funded by Federal Institute of Museum and Library Services (IMLS) for \$90,000. Goal is to identify and develop plans for addressing issues related to great ape cardiac health. Dr. Brown participates as a member of the etiology working group.

**SUMMARY OF ACCOMPLISHMENTS RELATED TO TEACHING**

**Teaching Awards**

Class of 2006 Faculty Recognition Award, 2003.  
Class of 2004 Faculty Recognition Award, 2001.  
Class of 2007 Faculty Recognition Award, 2004.  
David Tyler Award for Teaching Innovation, 2002.  
Class of 2005 Faculty Recognition Award, 2002.  
UGA Coll Vet Med Norden Distinguished Teacher Award, 2002.  
Class of 2001 Individual Career Impact Award, 2002.  
National Norden Distinguished Teacher Award, 2003.  
Josiah Meigs Distinguished Teaching Award and Meigs Distinguished Professorship, 2004.

**Five principle teaching innovations**

Participated in design and implementation of a major veterinary curricular revision  
Developed Case-Based Pathophysiology Course for Professional Students and Problem-Based Learning Course for Professional Students  
Directed the Georgia Veterinary Scholar Program, facilitating the elevation of our program to national prominence and led a successful initiative to establish a recurring National Veterinary Summer Scholar Symposium  
Played role in successful initiative to develop a collaborative university-wide team, funded by NIH, to develop and evaluate software for science education  
Participated in development and teaching of physiology curriculum for UGA-MCG Medical School

**Administrative work related to teaching**

1. Chair, Interdepartmental Ad hoc Curriculum Committee on Cardiovascular and Respiratory Systems, College of Veterinary Medicine, University of Georgia, 1998-9.
2. Chair, Curriculum Committee, College of Veterinary Medicine, University of Georgia, 1998-1999 and 2001-2002. (Member 1998 – present)  
*As Chair in 1998-9, facilitated efforts that prepared, revised, advocated, revised, defended, and revised a blueprint for curricular revision adopted by College faculty in 1999. As Chair in 2001-2, facilitated the first year of the implementation of new curriculum.*

3. Admissions Committee - Academic Credentials Evaluation - South Carolina and Georgia Applicants, College of Veterinary Medicine, UGA, 1999, 2000, 2002, 2004. Member of UGA-CVM Admissions Standing Committee 2004.
4. Acting Associate Dean for Academic Affairs, 2005-2006.  
*Identified, researched, and purchased software solution for Academic Affairs Office (NetKeva). Initial key phase of implementation completed Fall 2006.*  
*Initiative to enhance nontechnical skills for professional students: Practice Management Seminar (Fritz Wood); SKA exposure for Admissions and Curriculum Committees and College in general (Dr. Jim Lloyd); UGA-CVM students participated in Veterinary Learning Experience in summer 2005; Incorporated related experiences for First Year Orientation.*  
*Admissions:*  
*Supported initiative for novel admissions process in collaboration with Animal Science (FAHMP Food Animal Program).*  
*Participated in efforts to advance College's Minority Recruitment Efforts:*  
*Successful grant application (Co-I) to USDA's Multicultural Scholar Program, (\$120,000 for 2005-2010).*  
*Supported development of ONE (Student Diversity Committee)*  
*Participated in organization of Southeast CVM Diversity Meeting*  
*Participated in initiatives to develop DVM/MPH and DVM/PhD Programs*  
*Participated in conferences and business committees as normal part of Associate Dean*  
*Responsibilities: AAVMC Meeting 2005 and 2006; University Curriculum Committee; College Admissions Committee; College Curriculum Committee; College Scholarship & Appeals Committee; UGA Honors Council.*
6. Head, Department of Small Animal Medicine and Surgery, 2006-2011.  
*Responsible for directing departmental didactic and clinical teaching program.*

#### **Teaching Publication**

Brown S. Learning basic science alongside veterinary students: Creating an interactive classroom. J Vet Med Educ 2004;31:295-300.

#### **Electronic Teaching materials prepared**

1. Brown S: EKG Primer, Hypercard-Based Software for instruction of Cardiac Physiology, 1990.
2. On-line instruction, Veterinary Information Network, Developed and delivered on-line lectures, 1991-1996.
3. Website for Georgia Veterinary Scholar Program ([www.VeterinaryScholar.org](http://www.VeterinaryScholar.org)), Organized, authored, and administered Website devoted to the advancement of veterinary nephrology (1999-2002).
4. Xiu Y, Nute D, Coleman T, and Brown S. "K9ER Virtual Animal" and "Physio-Chart", Interactive computer programs for teaching veterinary physiology based on QCP Differential Equation Modeling, 2000-2004.

## **PRE-VETERINARY STUDENT EDUCATION:**

### **Mentoring of Undergraduate Students**

Lindsay Boozer, September 2001 – 2003.

**Presentations:** Boozer L and Brown SA. Use of serum creatinine normal ranges in defining feline renal failure. Center for Undergraduate Research (CURO) Symposium, UGA, 2002. Boozer L, Mathur SM, Brown C, Cartier L, Sheldon S, and Brown SA. Lack of utility of laboratory “normal” ranges for serum creatinine. Oral presentation, Am Coll of Vet Int Med Forum, Dallas, TX, 2002. Published abstract: *J Vet Int Med* 16:354, 2002.

Vanessa Reynolds, October 2001 – 2003.

**Presentations:** Reynolds V and Brown SA. Use of losartan as an antihypertensive agent in cats. CURO Symposium, UGA, 2002. Reynolds V and Brown SA. Losartan fails to block angiotensin in cats. Oral presentation, Am Coll of Vet Int Med Forum, Dallas, TX, 2002. Published abstract: *J Vet Int Med* 16:341, 2002.

### **Advisor, Mentor and/or Instructor to Undergraduate Students**

Mentor, Young Scholars' Program for undergraduate students, University of Georgia, 2007-2008.

Chris Hale, Interdisciplinary Studies Program, September 2001 – 2004. Facilitated the development of the first undergraduate major in Physiology at the University of Georgia.

Mentor for Undergraduate Students enrolled in University Honors Program (2001-present). Chris Hale, Susan Bennet, Laura Byrum, Melissa Cabinian, Rahul Desai, Reid Bowen, Jason King

Mentor for Undergraduate Students enrolled in NIH Minority Summer or Howard Hughes Research Fellowship Research Programs (1996-2001). Glenda Alvarez, Amita Baman, Tiffani Barlett

Undergraduate student teaching (1989 – 1993). Lectures (16 per year) - Elements of Physiology (VPHY 3100), The University of Georgia, Athens, GA.

Faculty Advisor, Pre-Veterinary Club, University of Georgia, 1993-1995.

## **PROFESSIONAL STUDENT EDUCATION:**

**Professional Student Teaching (Have contributed 15-92 lecture-contact hrs/year to veterinary students – 1989 - present):**

1. **Endocrinology.** Lecture-Applied Quiz Session 3-6 lectures/year. Polyuria and Polydipsia, Antidiuretic Hormone, Calcium Regulating Hormones. VPHY 5150, College of Veterinary Medicine, University of Georgia, Athens, GA, 1989-present.  
*Description: Lecture and case-based illustration of the importance of endocrine and metabolic influences on calcium homeostasis and hypothalamic function.*

2. Cardiovascular Physiology. Lecture - 14-22 lectures/year. VPHY 5120, College of Veterinary Medicine, University of Georgia, Athens, GA, 1990-2006; 2011-present.  
*Description: Classic integrative cardiac and vascular physiology taught with a goal of serving as a foundation for understanding physiology, pathophysiology, and clinical diseases of this system. Techniques utilized include a mixture of classic chalkboard lectures, PowerPoint presentations, a daily case to illustrate physiological concepts, in-class impromptu oral Q & A, and interactive computer programs. "Physio-Chart" and "K9ER Virtual Animal" are interactive computer programs developed thru cooperative, funded effort among S. Brown, T. Coleman (Miss State Sch Med) and D. Nute (Dept of Artificial Intelligence, UGA).*
3. Renal and Electrolyte Physiology. Lecture -- 20-22 lecture hours/year . VPHY 5160, College of Veterinary Medicine, University of Georgia, Athens, GA, 2000-2007.
4. The Physiological Basis of Clinical Disease and Therapy. Lecture - 15 lectures/year (Course developer and instructor). VPHY 5115, College of Veterinary Medicine, University of Georgia, Athens, GA, 2002-2005.  
*Description: This course utilizes a case-based approach with a mixture of minilectures and interactive class sessions to teach concepts of pathophysiology. The goal is to integrate all of the students' first year courses in anatomy, physiology, histology, and embryology to allow them to gain an appreciation for the mechanistic basis of veterinary diseases and therapy.*
5. Problem-Based Medical Pathophysiology. Problem-based course - 30 contact hours/year (Course developer, coordinator and tutor). VPHY 5216, College of Veterinary Medicine, University of Georgia, Athens, GA, 2002-2005.  
*Description: This course utilizes a problem-based approach and small groups to teach concepts of pathophysiology. The format is a classic Problem-Based Learning format with students working on case packets in small groups with a tutor. Students assume responsibility for their own learning.*
6. Urology. 15- 30 contact hours/year (Course coordinator ). SAMS 5230, College of Veterinary Medicine, University of Georgia, Athens, GA, 2007-present.  
*Description: This course utilizes a lecture- and case-based approach to teaching principles of medicine and surgery in the urinary tract for second year veterinary students.*
7. Medical Renal Physiology. 8 contact hours. UGA-MCG School of Medicine, University of Georgia, Athens, GA, 2011- present. *Description: This course utilizes a lecture- and case-based approach to teaching principles of physiology to first year medical students. Dr. Brown participated in development of learning objectives for the course and is responsible for 4 lectures renal physiology lectures and for assistance with development of integrative cases with renal disease and for participation in case discussions.*

#### **Professional Student Mentoring:**

Scholastic and Career Mentor to Professional Students (Voluntary Univ Ga Coll Vet Med Program):  
 31 University of Georgia College of Veterinary Medicine Students, 2002 – present.

#### **Mentored Professional Student Participating in Senior Project at Univ of Florida Coll Vet Med** Erin Holder, University of Florida Coll Vet Med, 2000-2001.

Presentation: Holder E, Citino S, and Brown S. Use of creatinine clearance to study renal function in captive cheetahs. American Association of Zoo Animal Veterinarians, Orlando, FL, 2001. Oral research abstract presentation.

Award: First Place, National Manuscript Competition, American Association of Zoo Animal Veterinarians, Orlando, FL, 2001.

Publication: Holder E, Citino S, and Brown S. Measurement of glomerular filtration rate, renal plasma flow, and creatinine clearance in cheetahs (*Acinonyx jubatus jubatus*). J Zoo Wildlife Med 35:175-178, 2004.

**Faculty Mentor, Georgia Veterinary Scholar Program**

Summer Research Scholars Working in Laboratory – 1996-present (all but 2 made local and/or National oral/poster abstract research presentations as part of their program):

Laura Thomas, Jefferson Morgan, Amy Belew, Jeff Johansson, Kimberly Langford, Jennifer Wernsing, Elizabeth Sanders, Carrie Jurney, Lauren Reid, Tiffany Jenkins

Visiting International Veterinary Student Working in Laboratory:

Edith Fontaine, Toulouse University, France, 1999

**Departmental Seminars – Professional - 27 total (1989-present) – Local, national, and international  
Representative examples (5)**

1. Insights in the study of progressive renal disease, Department of Small Animal Medicine and Surgery, University of Zurich School of Veterinary Medicine, Zurich, Switzerland, 1995.
2. The role of hemodynamics in the progression of canine renal disease. Grand Rounds, Department of Medicine and Epidemiology, School of Veterinary Medicine, University of California, Davis, California, 1997.
3. Recent advances in the measurement of blood pressure in cats. Department of Clinical Sciences, Ohio State University, Columbus, Ohio, 1997.
4. Systemic hypertension and the kidney. Department of Small Animal Medicine, College of Veterinary Medicine, University of Georgia, 2000.
5. Progression of chronic kidney disease. Grand Rounds, Department of Clinical Sciences, College of Veterinary Medicine, Kansas State University, 2011.

**GRADUATE STUDENT EDUCATION:**

**Graduate Student Mentoring:**

Graduate Student Committees (\*=major professor):

Master of Science Degree: Tianlun Wang, Mark Dorfman, Rachel Counts, Roc McCarthy,

\*Christopher Haberman, \*Trey Newell, Yunxiu Xu, Jason Schlachter

Doctor of Philosophy Degree: Eric Mueller, \*Daniela Ennulat, Wendy Anderson, Peggy McCann,

Helene Pazak, \*Katie Surdyk, Joy Owen, Chris Wildman, Maleka Hashmi

**Graduate Student Teaching (Contributed an average of 35 lecture hours/year to graduate students – 1989-present):**

1. Cardiovascular Physiology. Lecture - 20-30 hours/year. VPHY 6090, College of Veterinary Medicine, University of Georgia, Athens, GA, 1990-2004.
2. Renal Physiology. Lecture - 15 hours/year. VPHY 6100, College of Veterinary Medicine, University of Georgia, Athens, GA, 2000-2005.
3. Molecular Mechanisms of Renal Disease. Lecture - 30 hours every other year. VPHY 8060, College of Veterinary Medicine, University of Georgia, Athens, GA, 2003 – present (every other year).
4. Cardiovascular Physiology. Lecture & Course Coordinator - 6 hours/year. VPHY 8000, College of Veterinary Medicine, University of Georgia, Athens, GA, 1991-2004.
5. Cell Physiology. Lecture – 2-4 hours/year. VPHY 8010, College of Veterinary Medicine, University of Georgia, Athens, GA, 1998-2006.

**Graduate DVM Mentoring**

Visiting Scientists:

Chang won Kang, DVM, PhD, Chonbuk National University,  
Chonju, South Korea, March 1996 - June 1997

Chollada Buranakarl, DVM, PhD, Royal College of Veterinary Medicine,  
Thailand, February - March 2002

Visiting DVM Graduate Student:

Dr. India Lane, Colorado State University, March - April 1992.

**Departmental Seminars – Graduate - 19 total (1989-present) – Local, national, and international**

Representative examples (5):

1. The mechanism of protein and amino acid induced renal vasodilation. Department of Physiology Research Conference, Tulane Medical School, New Orleans, LA, 1989.
2. Glomerular hypertension in dogs. Department of Small Animal Medicine, College of Veterinary Medicine, University of Georgia, 1991.
3. Glomerular hyperfiltration in the dog. University of Mississippi Medical Center, Jackson, MS, 1992.
4. Can nutrients influence the course of chronic renal disease? Department of Foods and Nutrition, University of Georgia, Athens, GA, 1995.
5. Research approaches to chronic renal disease. Department of Medical Microbiology, College of Veterinary Medicine, University of Georgia, 2001.

**SUMMARY OF ACCOMPLISHMENTS RELATED TO CLINICAL SERVICE**

**Service Duties:**

Clinical Internship:

Department of Small Animal Medicine and Surgery:  
University of Georgia College of Veterinary Medicine  
June 1982 - August 1983

Clinical Residency:

Department of Small Animal Internal Medicine:  
University of Georgia College of Veterinary Medicine  
September 1983 - August 1987  
Board Certified, Specialty of Internal Medicine,  
Am Coll of Veterinary Internal Medicine - 1987

Clinical Rotations as Primary or Secondary Clinician in Internal Medicine (3-6 weeks/year) – 1989 - 1995

**Administrative work related to service**

1. ACVIM Hypertension Consensus Panel. *Chair and Organizer: Organized group of 15 veterinary experts in the field of systemic hypertension to develop recommendations for practicing veterinarians. Presented consensus statement at ACVIM in Denver in 2001. Received educational grant from Pfizer Animal Health (\$19,500) to fund a 2<sup>nd</sup> panel meeting in Dallas, TX in 2002. The Veterinary High Blood Pressure Society was formed in Dallas in 2002 as a result of this initiative.*

2. ACVIM Proteinuria Consensus Panel. *Member: Panel developed recommendations for practicing veterinarians. Panel presented consensus statement at ACVIM in 2004. Results published as Lees, G, Brown S, Elliott J, Grauer G, Vaden S. (2005). Assessment and management of proteinuria in dogs and cats: 2004 ACVIM Forum Consensus Statement. J Vet Intern Med 19: 377-385, 2005.*
3. Chair, International Renal Interest Society. *Presided over meetings in Lyon, France at World Veterinary Congress and Chicago, IL at Scientific Forum of American College of Veterinary Internal Medicine). Chair-elect for 2011-2012.*
  - a. *Spearheaded development of IRIS Staging system for Chronic Kidney Disease (Reported in 2005 Merck Manual and Ettinger's Sixth Edition of Textbook of Veterinary Internal Medicine).*
  - b. *Website for International Renal Interest Society (www.RenalHealth.org), Organized, authored, and administered Website devoted to the advancement of veterinary nephrology (1998-2001).*
4. Head, Department of Small Animal Medicine and Surgery, 2006-2008. *Responsible for oversight of departmental clinical service programs.*

#### **Books authored that are related to clinical medicine**

Renal Disease in the Dog and Cat. Elliott J and Brown S. Nova Professional Media, Oxon, UK, 2004, ISBN 1-904565-00-3.

Essential Facts of Blood Pressure in Dogs and Cats. Egner B, Carr A, Brown S. Blackwell, Berlin, Germany, Oxon, UK, 2004, ISBN 3-00-011096-8. [2<sup>nd</sup> edition: Essential Facts of Blood Pressure in Dogs and Cats. Egner B, Carr A, Brown S (eds). Blackwell, Berlin, Germany, Oxon, UK, 2007].

#### **Graduate DVM Lectures (Continuing Education Lectures)**

Topics related to Nephrology, Urology, and Veterinary Internal Medicine:

263 Hours of International and National Presentations (1989-present)

102 International and National Proceedings Chapters (1989-present)

#### Representative examples (10) of continuing education presentations:

1. Dietary Fatty Acid Supplementation and Veterinary Medicine, Organized and Moderated Full Day Symposium; Delivered address entitled: Dietary fatty acid supplementation and chronic renal disease. American College of Veterinary Internal Medicine Scientific Forum, Washington, DC, 1995.
2. Diet and Renal Disease: Concepts and controversies, World Veterinary Congress, Yokohama, Japan, 1995.
3. ACE Inhibitors in chronic renal disease. Royal Society of Medicine, London, 1999.
4. Role of converting enzyme inhibition in the management of chronic renal disease. European Society of Veterinary Internal Medicine, Vienna, Austria, 1999.
5. New treatments in the management of chronic renal failure in cats. World Veterinary Congress, Lyon, France, 1999.
6. Systemic hypertension in cats. State of the Art Address, Annual Meeting of the British Small Animal Veterinary Association, Birmingham, UK, 2000.
7. Roles of cytokines and growth factors in the progression of canine and feline renal failure. European College of Veterinary Internal Medicine, Neuchatel, Switzerland, 2000.
8. Diagnosis and Treatment of Systemic Hypertension. Annual Meeting of the American College of Veterinary Internal Medicine, 2001.

9. Proteinuria and Chronic Kidney Disease. North American Veterinary Conference, 2005.
10. Role of hypertension and metabolic factors in the progression of chronic kidney disease, European College of Veterinary Internal Medicine, Porto, Portugal, 2000.

**Miscellaneous Recent Campus and College Service**

Member and Chair, University-wide Promotion and Tenure Committee, University of Georgia, 2004-2007.

Member, University Council, University of Georgia, 2003-2005; 2008.

Member, Academic Affairs Committee, University Council, University of Georgia, 2002-2003.

Member, University of Georgia Dean Search Committee, 2005

Member and Chair, UGA-CVM Animal Care Committee, 2002-2005

Member and Chair, Melgs Professorship Selection Committee, University of Georgia, 2005-2007.

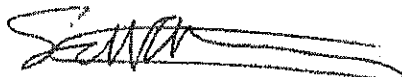
Member, University Curriculum Committee, 2012-present.

**ADDENDUM TO REPORT**  
**IN MATTERS BEFORE THE UNITED STATES DISTRICT COURT**  
**RELATED TO NATIONAL FEEDS AND VARIOUS MINK PRODUCERS**

Mink are susceptible to acute N-nitrosamine toxicity, indeed they are more sensitive than many mammalian species to acute toxicity from these compounds. While multiple organs can be acutely affected by this intoxicant, death of mink from acute intoxication with N-nitrosamines would be expected to produce histologically apparent hepatotoxicity; evidence of hepatotoxicosis was not a characteristic feature of animals in this matter. Therefore, death in adult animals cannot be attributed to the reported acute effects of N-nitrosamine toxicosis.

Chronic N-nitrosamine exposure could alter immune function but there is no direct evidence of immunosuppression in these animals. Further, the renal complications of Aleutian Disease contributed to the death of a significant proportion of the adult mink. In other mammalian species, immunosuppressive agents are used as treatment to control this particular kind of kidney disease. While little direct information is available about this approach in mink, extrapolation from other species would suggest that immunosuppression from chronic nitrosamine ingestion could make renal complications less likely, not more as was the case in this matter. Further, nitrosamines are potent carcinogens and chronic toxicity would be expected to result in increased incidence of cancer in adult mink, which to my knowledge was not observed.

There is clear evidence that disease processes not caused by N-nitrosamine are present in the affected mink. Assessing the possibility of a potential contributory role of N-nitrosamine is very difficult. Identifying N-nitrosamine in the diet and/or in mink does not establish causation. It is theoretically possible that N-nitrosamines contributed in some way to this matter, but there are not sufficient data to establish this conclusion and it is not the proximate cause of death in necropsied animals.

 25 Jan 13

Scott A. Brown, VMD, PhD, Diplomate (Internal Medicine, ACVIM)  
Josiah Meigs Distinguished Teaching Professor of Physiology & Pharmacology  
Edward H. Gunst Professor of Small Animal Studies  
College of Veterinary Medicine  
University of Georgia